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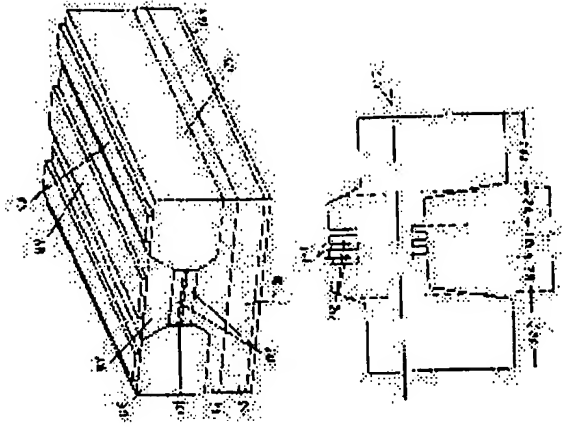
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 (71) Applicant : MATSUSHITA ELECTRIC IND CO LTD  
 (72) Inventor : MORI YOSHIHIRO  
 SHIBATA ATSUSHI  
 OGURA MOTOTSUGU

## (54) SEMICONDUCTOR LIGHT EMITTING ELEMENT

## (57) Abstract:

PURPOSE: To facilitate high speed operation by a method wherein a multi-quantum well is provided in a base layer to facilitate laser oscillation or light emission of a laser transistor or a light emitting transistor in an activated condition.

CONSTITUTION: Referring an energy level diagram which describes the band conditions of an emitter layer 103, a base layer 110 and a collector layer 104, a multi-quantum well 101 consists of two types of InGaAsP layers which have respective forbidden band widths different from each other, i.e. an In<sub>0.73</sub>Ga<sub>0.27</sub>As<sub>0.59</sub>P<sub>0.41</sub> quantum well layer 111 and an In<sub>0.87</sub>Ga<sub>0.13</sub>As<sub>0.31</sub>P<sub>0.69</sub> barrier layer 112. Carriers are captured in the layer with the narrower forbidden band and recombination is created and a light is emitted. Therefore, quantity of the emitted light depends upon quantity of the captured carriers and the wavelength of the emitted light is determined by the layer thickness. The thickness of the multi-quantum well layer 101 is 700Å. The reference numeral 102 denotes a P-type In<sub>0.87</sub>Ga<sub>0.13</sub>As<sub>0.31</sub>P<sub>0.69</sub> layer, 103, an N-type InP emitter layer and 104, an N-type InP collector layer.



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